REMARKS/ARGUMENTS

Claims 1-31 are pending in the present application. By this Amendment, claim 2 is amended and claims 13-31 are added. Claims 1-12 are rejected, and claims 7 and 8 are objected to. Reconsideration of the application is respectfully requested for at least the following reasons.

I. Objections

The Office Action objects to claims 7 and 8 under 35 U.S.C. § 1.75(c) for improper multiple dependency. Applicants respectfully traverse the objection and submit that claim 7 was amended by Preliminary Amendment dated November 16, 2000 to recite, in part, "The method according to claim 1, . . ." Withdrawal of the objection to claims 7 and 8 is respectfully requested.

II. 35 U.S.C. § 102(b)

The Office Action rejects claims 1-5 and 9-11 under 35 U.S.C. § 102(b) as being anticipated by Wittenstein et al. (hereinafter "Wittenstein"), U.S. Patent No. 5,734,744. Since Wittenstein fails to disclose all of the features of the claims, the rejection is respectfully traversed.

Wittenstein relates to a method for compressing color video data. The color compression process of Wittenstein includes the steps of sampling colors from the pixels of a source image, quantizing the color space, and quantizing the source data pixels (i.e., mapping colors of the individual pixels of the source image to the quantized colors). (See Abstract, and

column 5, lines 45-48). Wittenstein, at column 6, lines 1-11, states that the color sampling step generates a full, reduced or sparse histogram for the image file, in which each bin represents one of the colors present in the source image, and the bin "contains" the number of pixels having the associated color. Wittenstein, beginning at column 7, line 19, states that the an indexed color histogram 302 is then used to quantize the color space, by yielding perceptual colors 502.

The Office Action asserts that Wittenstein, at column 7, lines 19-23 and 57-65, describes histogram bin value quantization. However, Applicants respectfully submit that the color space quantization described in the cited portions of Wittenstein relied upon by the Office Action does not teach bin value quantization. Applicants respectfully note column 7, line 18 is titled, quantizing the color space. Applicants respectfully submit that one having ordinary skill in the art would appreciate the distinction between color space quantization, to which Wittenstein is directed, and bin value quantization. As discussed above, color quantizing in Wittenstein generally relates to the designation of a limited number of representative colors for the purpose of grouping neighboring colors generated in the color sampling step. The color space quantization step described in Wittenstein, at column 7, lines 57-65, appears to involve the quantization of colors based upon a determination of centroid color locations (initially, the most populated bins of the indexed histogram or full histogram). The Office Action asserts that the centroid selection process of Wittenstein necessarily yields color locations separated by varying distances, which the Office Action concludes, creates non-uniform quantization of the source image histogram.

Embodiments of the present invention are directed to quantization of a histogram bin value of an image or video. Claim 1 recites, "the histogram bin value is non-uniformly quantized according to the frequency of occurrence." In general, a bin value can be understood as a normalization value (as a decimal number, for example) of the frequency of color occurrence, irrespective of how the colors (i.e., color bins) are designated (e.g., color sampling, color quantization, etc.). For example, bin values can be normalized to a range of a histogram bin value from 0 to 1, with the bin values summing to 1. Quantization of a histogram bin value can involve dividing bin values in the range from 0 to 1 by a uniform or non-uniform value to uniformly or non-uniformly quantize the bin values, and can be independent of color space quantization. Accordingly, Applicants respectfully submit that Wittenstein does not teach at least features of bin value quantization in which the histogram bin value is non-uniformly quantized according to the frequency of occurrence, and the combinations thereof.

For at least the reasons set forth above, Applicants respectfully submit that claim 1 is allowable. Claims 2-5 and 9-11 depend from claim 1, and are allowable for at least the same reasons, as well as additional patentable features recited therein and the combinations thereof. Withdrawal of the rejection of claims 1-5 and 9-11 under 35 U.S.C. § 102 is respectfully requested.

III. 35 U.S.C. § 103(a)

Claims 6-8 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wittenstein. Since the references, alone or in combination, fail to teach or suggest all the features of the claims, the rejection is respectfully traversed.

Claims 6-8 and 12 depend directly or indirectly from claim 1, and thus are allowable for at least the same reasons. Specifically, Wittenstein appears to disclose a novel representation of a small number of colors for a large number of colors. Further, a histogram generated in Wittenstein appears to use a uniform bin quantization, and Wittenstein does not appear to teach or suggest non-uniform bin value quantization. See column 6, lines 2-11 of Wittenstein.

Further, with respect to claims 6 and 12, the Office Action acknowledges that Wittenstein fails to teach or suggest the respective range limitations recited in claims 6 and 12. Applicants respectfully disagree with the assertion set forth in the Office Action that it nevertheless would have been an obvious matter of design choice to so modify Wittenstein. Contrary to the assertion that Applicants have not disclosed that the cited ranges solve any stated problem, embodiments of the present application describe several advantages to the recited range limitations, for example, at page 1, line 22 – page 2, line 5, page 5, line 23 – page 6, line 9, page 6, line 24 – page 7, line 7, and page 8, lines 14-22. Embodiments of the present application further describe, for example, that a natural visual image or video depicting scenery, a person, an object, etc., is generally low in natural image such that as represented as a normalized bin value histogram, most of the bins (as high as 95% or more) have a value of '0', and few bins, if any,

have a value greater than 0.1. Thus, it can be advantageous to finely quantize bin values near '0' so that the intervals of the bin value are small, while bin values near '1' can be quantized coarsely that the intervals of the bin value are large.

It should also be noted that Applicants respectfully disagree with the characterization of claim 12 set forth in the Office Action, at page 6. Claim 12 recites, in part, "the range having a bin value of greater than '0' and less than the largest threshold is from 0.0001 to 0.0999."

For at least the reasons set forth above, Applicants respectfully submit that claim 1 is allowable. Claims 6-8 and 12 depend from claim 1, and are allowable for at least the same reasons, as well as additional patentable features recited therein and the combinations thereof. Withdrawal of the rejection of claims 6-8 and 12 under 35 U.S.C. § 103 is respectfully requested.

IV. New Claims

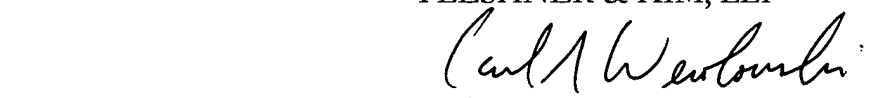
Claims 13-31 are newly added by this Amendment and believed to be in condition for allowance. For example, claim 13 recites features of non-uniformly quantizing the histogram by using different range values in the at least first, second and third sections of the histogram determined by the threshold values and combinations thereof. Claim 23 recites features of wherein a third section of the histogram includes values having a histogram bin value between 0.0 and a number larger and very close to 0.0 are mapped into a single quantum in quantizing the histogram bin value and combinations thereof. Claim 28 recites features of performing a search using the non-uniformly quantized histogram and combinations thereof.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **Garth D. Richmond**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
FLESHNER & KIM, LLP



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Date: March 10, 2004